62 Analyzing Genetic Data

LABORATORY

In this activity, you will obtain data from the seeds you germinated in Activity 55, "Plants Have Genes, Too!" and investigate whether your own data agree with Mendel's model for inheritance.

CHALLENGE **Do your results agree with Mendel's model for inheritance?**

MATERIALS

For each group of four students

- **1 petri dish of seedlings from Activity 55, "Plants Have Genes, Too!"**

For each student

- **Student Sheet 55.1, "Talking Drawing: Plant Offspring," from Activity 55**

PROCEDURE

1. Get your dish of sprouted seedlings.
2. With the lid off, examine each seedling plant carefully. With your partner, count the number of green seedlings and the number of yellow seedlings.
3. Prepare a data table in your science notebook to summarize your results. Add an extra line for the class total results.
4. Report your results to your teacher, as directed.
5. Look at your original drawing on Student Sheet 55.1, "Talking Drawing: Plant Offspring."On the bottom half of the sheet, draw the results that you observe from your seedlings. Explain any differences between the two drawings.
6. Your teacher will display the class's total data. Record the data in your data table.

ANALYSIS

1. Compare the class's results for seedling color to Mendel's results for various pea plant traits. Why are they similar? What do they suggest about the inheritance of the pale yellow and green *Nicotiana* traits?

2. Do each group's results fit Mendel's model? Explain.

3. When you first set out these seeds to germinate, you were told that they were all the offspring of two green parent plants. You were also told that each of the green parents had one green parent and one yellow parent.
   a. Based on the class's results, what can you conclude about the color alleles of each of the green parents of your seedlings?
   b. How is this breeding cross similar to the one you modeled in Activity 59, "Gene Combo"? Explain.
4. What were the genotype and phenotype of the parent plants of your seedlings?
5. Construct a Punnett square to show what will happen if one of the green parent-generation *Nicotiana* plants is crossed with a pale yellow plant. Explain the results.

EXTENSION

For a larger sample size, view the data gathered by fellow students from other locations. Go to the *Issues and Life Science* page of the SEPUP website for instructions.